

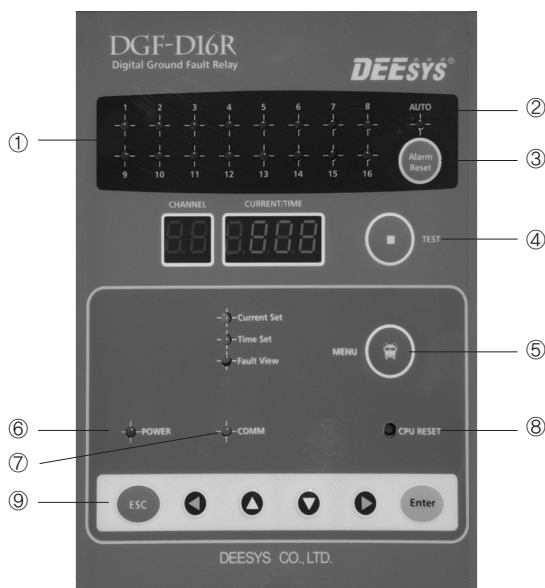
DIGITAL GROUND FAULT RELAY

Features



- This is digital ground fault relay(8C, 16C) to detect and display ground fault current value and accident current value, Furthermore check earth fault current through ZCT and use for alarm and breaker trip when it's happened earth accident,
- It can be fully cost down because designed to have ARB–Aux Relay Board within this device and connect direct to external MCCB.
- it can show nomal signal against Noise and harmonic and display and control protection relay by remote by means of RS–485 Comm. And monitoring program,
- One product cover max, 16C(Two Type(8C and 16C)).
- It can be used exiting panel because cutting size is same, do not need additional work,
- This have RTC Module and so manage and store fault data through RS 485 comm. Monitoring Program,

Name Plate (Front Panel)



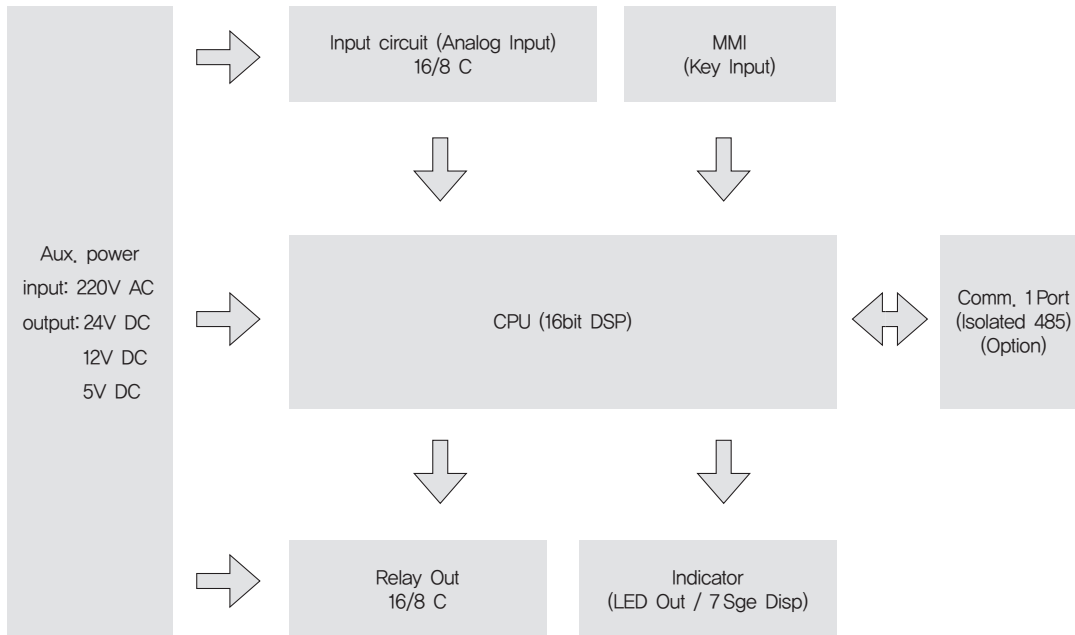
- ① **Alarm Lamp [RED]**
Light a lamp of the channel which is happened, when ground fault on each circuit is acted, display fault value on FND. The lamp is reset by manual, however, reset to auto if set on auto,
- ② **Auto Lamp [RED]**
Display auto reset of Alarm lamp and output point and can set using Menu Key.
- ③ **Alarm Reset Key**
Set alarm lamp using manual key if not set using auto key, while not reset if not release fault current,
- ④ **Test Key**
Check each of the circuit and the state of the connection of ZCT, if push this key, automatically test from one to 8C(16C).
- ⑤ **Menu Key**
Current Set / Time Set / Fault View / set comm., / Buzzer Off
Repeat this Key, move to next step in sequence
- ⑥ **Power Lamp [GREEN]**
Display the state of power and system
- ⑦ **Comm Lamp [YELLOW]**
Turn on the lamp when normal comm., through RS–485.
- ⑧ **CPU Reset**
Restart the System.
- ⑨ **ESC / ◀ / ▲ / ▼ / ▶ / ENTER SWITCH**
Use change setting by Menu Key,
▲, ▼ increase setting value ◀, ▶ Key ⇄ move the position.

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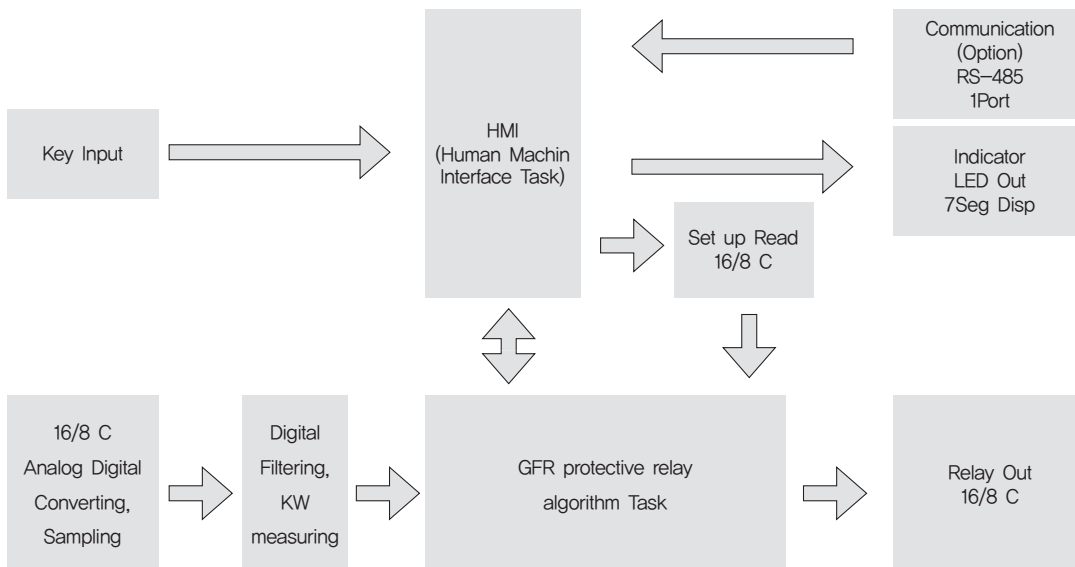
Specifications

Environment	Acting Temp.	-10°C ~ 50°C			
	Custody Temp.	-20°C ~ 60°C			
	Relative Humidity	Below 80% [No Condensing]			
	altitude	below 2,000 meters above sea level / safety place no vibrate and shock			
Cotrol Power	Rating Frequency	50 / 60Hz [±5%]			
Cotrol Power	Rating Volt,	AC / DC 110 ~ 220V			
Cotrol Power	Acting Volt,	AC / DC 88 ~ 240V			
Burden	Output Volt,	DC +12V / +5V / -5V			
Burden	Output Current	1A / 2A / 2A			
Burden	Output Burden	Max. 50VA / [Raring : 32VA]			
ZCT	Rating	AC 200mA / 100mV			
ZCT	Output tolerance	AC 75 ~ 125mV / load resistance 2k Ω			
Display		6 Digit FND [Channel : 2Digit / Current & Time Set : 4Digit]			
Fault Memory		Display fault circuit and current value through FND in case of fault current Check recent fault current value per channel through fault current checking function Cumulative Management for fault data following fault time through RS 485 comm. Software			
Alarm Reset		LED 및 Output contact point [auto return setting function]			
Comm.,		RS-485C Isolation 1Port /Protocol : Modbus RTU /Comm. Speed : 9,600/19,200bps			
MODEL		DGF - D16	DGF - D08	DGF - D16R	DGF - D08R
Input circuit		16c	8c	16c	8c
Output point	Individual contact	-	-	16a Contact	8a Contact
Output Contact	commom	1a Contact			
Output Contact	Contact capa,	AC 125V, 10A / DC30V, 10A			
Acting current	current TAP	0.1 ~ 10.0A [0.1A Step]			
Acting Current	Acting range	Within ±5% of each correction			
Acting time	Acting characteristics	[Definite Time]			
Acting Time	LEVER	0.05 ~ 10.00sec [0.05sec Step]			
Acting Time	Acting time tolerance	Within 0.05 ~ 0.20sec : ±25ms /within 0.20 ~ 10.00sec : ±5%			
reset	reset current	Reset within 90% of each correction			
Reset	Reset characteristics	[Instant Time]			
Reset	Return time	Within 100ms			
Reset	Return method	Auto / Manual			
H.M.I	KEYPAD	Esc, ◀, ▶, ▲, ▼, Enter, Test, Menu, Alarm Reset, CPU Reset			
H.M.I	LED	green [GREEN] : power yellow [YELLOW] : Current Set / Time Set / Fault View / Comm red [RED] : Alarm / Auto od each channel			
Applied standard		KS C8328			

Hardware Block Diagram



Software Block Diagram



DIGITAL GROUND FAULT RELAY

Operating Manual

1. DISPLAY MENU

- 1) FND Display Window :
 - Display current value of Channel 1 on FND display menu after cpu reset if power on.
 - Display one to 16 Channel on FND display step by step using [▲, ▼] KeyDisplay current value of each channel on FND Display of (Current / Time).
Ex) [1] [1,000] : Current 1A of One Channel
- 2) System display Lamp :
 - Lamp on the status of CPU Run after Power on.
 - Comm. LED : Lamp on the time of the request comm. Data from SCADA System.
- 3) Auto setting display Lamp : Lamp on the time of auto reset setting.
- 4) Fault display Lamp : Lamp on each of circuit in point when it' s happened earth fault..
 - Lamp off automatically if set on auto reset
 - Lamp on until push Alarm Reset by manual if not set on auto reset.
 - Lamp on fault display with that data when repower in case of control power off.
 - ※ In case of reset the lamp by push the key, it' s not on the lamp.
- 5) Buzzer set display Lamp : Use only notice lamp for ELD, Lamp on in case of the limit using the buzzer (Buzzer Off).
- 6) Menu Lamp :
 - Acting Current set Lamp, Acting time set lamp, Auto reset Lamp, Fault current check Lamp, Buzzer Off Lamp

2. CURRENT SET

- 1) Check the lamp of current set through push menu key on the front at initial display menu.
 - Display with [oP] [Curr]on FND display menu.
- 2) Select the function of current set through push (Enter) Key.
 - Display current setting value of related circuit and Circuit no. on [FND] display menu.
- 3) Push (Enter) Key after select changing circuit for using [▲, ▼] Key.
 - If push (Enter) Key, Lamp off current setting value on display menu of Current / Time.
 - Lamp off the number of minimum unit..
 - ※ If select [All] Key using [▼] Key in (Current / Time) display menu, you can change current setting value of all kind of the circuit ,
- 4) You can increase current value using [▲, ▼] Key and change current value moving the position of decimal point using [◀, ▶] Key.
 - You can set by 0,1A unit.
- 5) set changed current value if push (Enter)] Key after change completion, Return to initial menu if push (Esc)] Key.

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3. TIME SET

- 1) check lamp on/off Current setting through push (Menu) Key continuously on initial display menu.
 - Display with [oP] [Curr] at FND display menu.
- 2) Select the function of current time set through push (Enter) Key.
 - Display current time setting value of related circuit and Circuit No., on [FND] display menu
- 3) Push (Enter) Key after select changing circuit for using [▲, ▼] Key.
 - If push (Enter) Key, Lamp off current setting value on display menu of Current / Time.
 - Lamp off the number of minimum unit.
 - ※ If select [All] Key using [▼] Key in (Current / Time) display menu, you can change current time setting value of all kind of the circuit ,
- 4) You can increase time value using [▲, ▼] Key and change acting time value moving the position of decimal point using [◀, ▶] Key.
 - You can set by 0,05sec unit.
- 5) set changed acting time value if push (Enter) Key after change completion, Return to initial menu if push (Esc) Key.

4. FAULT VIEW

- 1) Check the lamp of Fault View through push menu key continuously on the front at initial display menu.
 - Display with [oP] [Fit] on FND display menu.
- 2) Select the function of Fault current value through push (Enter) Key.
 - Display fault current value of related circuit and Circuit no. on [FND] display menu.
 - ex) [1] [0,50] ; fault current 0,50A of circuit No. 1
- 3) Display related circuit no. on channel display menu if you change the circuit using [▲, ▼] Key sequentially and display fault current value of related circuit on (Current/Time) display menu.
 - ex) [2][0,80] ; fault current 0,8A in circuit No. 2.
- 4) Return to initial menu if push (Esc) Key after change completion,

5. AUTO RESET

- 1) check [rS](Channel display menu as push menu key continuously at initial menu.
 - Display the status of auto reset as [ON] or [OFF] on (Current/Time) display menu.
- 2) select the function of auto reset as push (Enter) Key.
 - Display Lamp [ON] or [OFF] on (Current/Time) display menu.
- 3) store setting value as push (Enter) Key after select [ON] or [OFF] using [▲, ▼] Key.
- 4) Return initial menu as push (Esc) Key after setting completion.

6. BUZZER ON / OFF (*apply to only ELD setting, no setting item on GFR.)

- 1) Check [bu] on (Channel) display as push (Menu) Key continuously on initial menu.
 - Display [ON] or [OFF] for Buzzer setting on (Current/Time) display menu.
 - ex) [bu] [on] ; Buzzer setting [ON]
- 2) Select the function of Buzzer setting as push (Enter) Key.
 - Lamp [ON] or [OFF] on (Current/Time) display menu.
- 3) store setting value as push (Enter) Key after select [ON] or [OFF] using [▲, ▼] Key.
 - Stop Lamp off as push (Enter) Key, Display the status of Buzzer setting on (Current/Time) display menu.
 - Cancel the setting and display formerly setting data if (Esc) Key at the condition of not push (Enter) Key.
- 4) Return to initial menu if push (Esc) Key after setting completion,

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Operating Manual

7. ADDRESS SET

- 1) Check [Ad] (Channel display menu as push menu key continuously at initial menu.
 - Display setting comm., address (1~32) on (Current/Time) display menu.
- 2) Select the function of comm. address setting as push (Enter)] Key.
 - Lamp off comm., address display on (Current/Time)] menu
 - Lamp off the number of minimum unit.
- 3) You can increase address data using [▲, ▼] Key and store setting data as push (Enter)] Key after select comm., address Through moving the position of decimal point . using [◀, ▶] Key.
- 4) Return to initial menu if push (Esc)] Key after setting completion,

8. BAUD-RATE SET

- 1) Check [br] (Channel display menu as push menu key continuously at initial menu.
 - Display setting comm., speed [9.6] or [19.2] on (Current/Time) display menu.
 - 9.6 : 9,600bps / 19.2 : 19,200bps
 - ex) [br] [9.60] ; Now set 9,600bps
- 2) Select the function of comm. speed setting as push (Enter)] Key.
 - Lamp off comm., speed display on (Current/Time)] menu
- 3) Store setting data as push (Enter)] Key after select comm., speed using [▲, ▼] Key
- 4) Return to initial menu if push (Esc)] Key after setting completion,

9. (TEST)

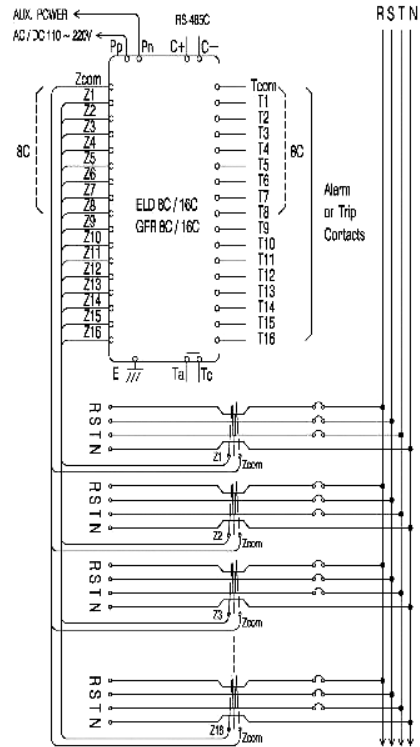
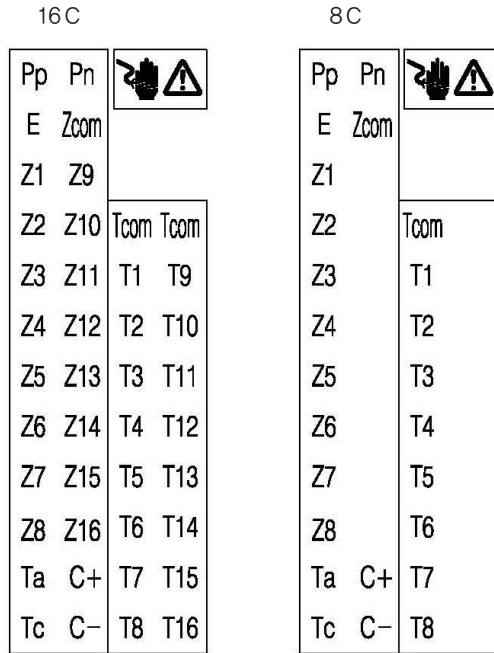
- 1) Select test mode as push (Test)] Key on initial menu.
- 2) Display [All] or [Ch] repetitively on [FND] menu as push (Test)] Key key continuously.
 - [All] [TEST] : All of auto test mode
 - [Ch] [TEST] : selected test mode
- 3) All of auto test mode :
 - You can test all of channel the as push (Enter)] Key when display [All] [TEST] on [FND] menu.
 - You can test of ZCT, Relay, falt display from 1 to 16 (1 to 8) channel.
- 4) selected test mode:
 - select individual test mode as push (Enter)] Key when display [Ch] [TEST] on [FND] display.
- 4-1) select test channel using [▲, ▼] Key. At this time display channel no. on (Channel) menu.
- 4-2) Start individual test as push (Enter)] Key after select the channel.
 - You can test of ZCT, Relay, falt display from 1 to 16 (1 to 8) channel.
- 5) You can reset output circuit as push (Alarm Reset)] Key in case of not set auto reset.
 - It can be auto reset if set auto resrt.
- 6) return to initial menu as push Esc)] Key.

10. FAULT (ALARM) RESET

- 1) Lamp on Fault display if happened earth fault.
 - You can reset output circuit as push (Alarm Reset)] Key in case of not set auto reset.
 - It can be auto reset if set auto resrt.

Terminal Arrangement

Wiring Diagram



- Pp : Control Power (+)
- Pn : Control Power (-)
- E : Earth
- C+ : RS-485 comm. port (+)
- C- : RS-485 comm. Port (-)
- Z1 ~ Z16 : ZCT Input (+)
- Zcom : Zct Input (-) (Common)
- T1 ~ T16 : Output electric contact (+)
- Tcom : Output electric contact (-) (common)
- TA : common output electric contact (+)
- TC : common output electric contact (-)

External dimension

ELD 8C/16C GFR 8C/16C

Cutting Size: 165X122mm

